**How to: Inquiry**

Inquiry-based learning is founded on students taking the lead in their own learning, but it still requires considerable planning on your part. Projects must fit into your larger program structure, goals and plans, but the students will be actively involved in planning the projects with you and asking the questions that launch their individual inquiries.

**The Importance of Planning**

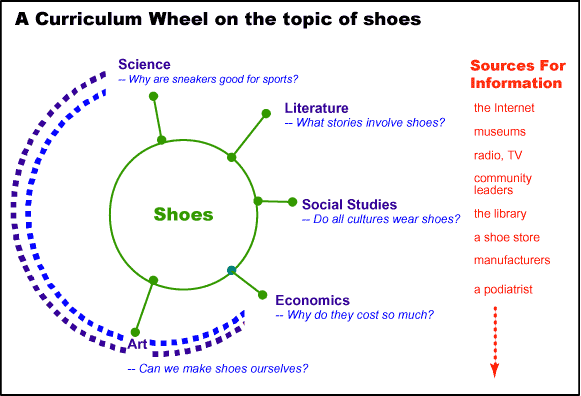
It's impossible to project all the possible ways in which you can build inquiry into programs, projects and activities, but preparing for most projects involves three basic steps:

* + **Pre-planning:** Before going to the kids, determine any preliminary factors or characteristics that must be true in order to achieve your larger goals or plans. Consider factors such as scope, the amount of time you'll spend over how many sessions, relationships to other projects, topical focus, age appropriateness, skills you want to use, resources, media and collaboration techniques. Make any decisions up front that you have to, but let the kids decide as much as possible.
  + **Brainstorming:** Assuming the widest range of possibilities, start a discussion in class to find out what the kids are interested in. Ask some broad questions about their interests. Try some simple [mapping](http://www.youthlearn.org/learning/teaching/techniques/mapping/mapping) activities to record the ideas they suggest and to begin winnowing them down to one or a few.

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| tip | Avoid letting individuals work alone on totally unconnected projects. It's not that there's anything wrong with that, but the kids won't get the advantage of developing collaboration skills and you'll be spread awfully thin trying to help them all on such disjointed topics. |

Remember, your role is to guide them toward achieving learning objectives and mastery of skills that they need. If they pick the questions that start the inquiry, they'll have no end of such questions, even if you subtly limit the parameters. In most cases, you'll be better off having the whole class work on a single concept or breaking up into teams to work on particular questions, aspects or executions of that theme or idea. Just make sure that they feel ownership of the topic and truly care about it.

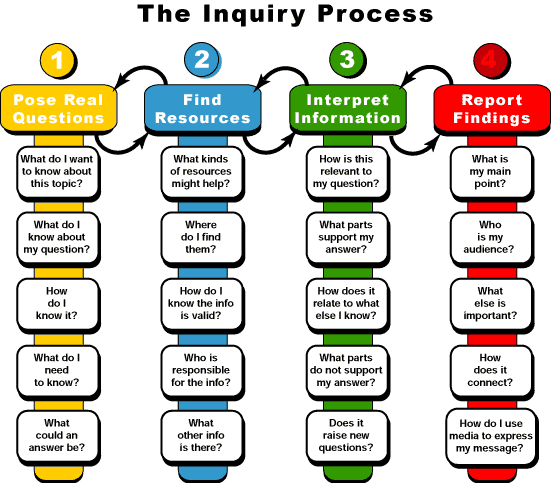
* + **Questioning:** Almost any topic can become the foundation for an inquiry-based project, even something as mundane as shoes, if that's what the kids are interested in. Suppose you've decided on that topic. Ask the kids what they would like to know about shoes, and map the questions to areas of study as shown in the curriculum wheel below.



Ask questions such as "Where could you find resources to answer your questions?" Incorporate visual mapping techniques to select and refine questions and associated projects or activities. Remember, your job is to guide the kids as they navigate the learning process for themselves.

**Step-by-Step Through the Techniques**

The essence of inquiry-based learning is that children participate in the planning, development and evaluation of projects and activities. Teachers can take many approaches to crafting an inquiry-based project, but Dr. Cornelia Brunner of the [Center for Children and Technology](http://www2.edc.org/CCT/cctweb/) breaks it into four main parts: **Posing Real Questions, Finding Relevant Resources, Interpreting Information and Reporting Findings.**



**Step 1: Posing Real Questions**

Your ability to help students arrive at their "real" questions is the central technique of inquiry-based learning. It involves examining issues such as

* + What do I want to know about this topic?
  + What do I need to know?
  + What do I know already and how do I know it?
  + What might a possible answer be?

How you encourage students to explore those questions will depend on their [age and sophistication](http://www.youthlearn.org/learning/general-info/our-approach/understanding-ages-stages/understanding-ages-stages), but two things must happen for a successful activity:

* + The inquiry must relate to a student's real question; it should not be a bait-and-switch in which the student actually pursues the teacher's interests. Helping students find their real question can sometimes be no easy matter because they may not know the real question themselves. For example, kids of a certain age might tell you that they are interested in studying modern music, but what they might really be interested in is learning how to dance because they feel socially awkward. Through [modeling](http://www.youthlearn.org/learning/teaching/techniques/modeling/modeling) and [skillful questioning](http://www.youthlearn.org/learning/teaching/techniques/asking-questions/asking-questions), your job is to help them get to the thing they really want to learn. This situation can be particularly true with young students, who do not have fully developed reasoning techniques.
  + The questions must ultimately be answerable. Questions like "What color is God?" or "Can I become a national leader?" are valid questions, but they are belief-based and not subject to the scientific and quasi-scientific methods that are at the root of inquiry-based learning. Similarly, questions that are highly personal, are based on opinion, or do not lend themselves to a practical source or experiment won't work either.

You must help students identify and refine their questions for exploration and help them realize when a question is not appropriate for a given project. The process of refining questions includes helping students identify what they know and don't know about the subject, identifying subquestions that may be part of the larger question and, most important, formulating hypotheses about what the answer might be. This last step can be a powerful tool in determining whether a question is answerable.

**Step 2: Finding Relevant Resources**

Between the question and the answer are sources of information. What kinds of sources might help? Where do you find them? How do you know the information is valid and who is responsible for it? What other information is there? Answering questions like these begins the process of assembling and then assessing evidence to ultimately answer the inquiry. The key distinction in this phase is that the learner must be kept focused not on finding the answer but on finding sources that might have information that could lead to the answer.

Sources of information include books, people, experiments, Web pages and discussion groups on the Internet. Although finding source material can sometimes be the easiest part of the process, assessing the information is trickier. Because real inquiries are rarely about objective facts, it is probable that no one has ever posed the inquiry in exactly the same way before, and finding a swift, pointed answer is not likely to occur.

Learners must be taught the skills to collect bits of partial answers and assess their validity. Because all information tends to be biased by the perspective, experience or interest of its author—whether it's from a book or one's grandmother—developing critical evaluation skills is key. Doing so becomes especially important in light of the widespread misinformation in our world—misinformation made all the more accessible by the Internet. Be careful, especially with younger children, to instill a healthy awareness of the concept that information is "authored," rather than a broad distrust or even disdain for authorities.

**Step 3: Interpreting Information**

Closely related to evaluating the quality of information is the next step: evaluating its applicability to the original inquiry question. How is this information relevant? How does it relate to what else we know? What parts support the hypothesis and what parts do not? Does it raise any new questions?

Again, learners catalog information and record new questions that arise, but now they focus on the relationship of that information to the hypothesis and to the other bits of information. One critical aspect of this process is to instill in children the need to actively look for information that disproves their hypothesis. Just because some data support it does not mean a hypothesis is true. Other explanations could apply to the same data. Equally important, help children understand that quantity of information does not trump quality.

**Step 4: Reporting Findings**

During the validation and interpretation processes, students continue to refine their real question and, one hopes, find an answer, although that answer may not be as simple as they originally thought. It may even contradict their original hypothesis, but that should not be a discouraging experience if it is handled properly. Think about video games: Instead of being discouraged when they hit an obstacle, kids see it as a challenge to overcome and will go to great lengths to find the answer. Instructors should emphasize at each stage of the inquiry that the investigation is a journey and that finding new information is exciting, especially when unexpected.

Even the reporting stage in an inquiry activity contrasts with traditional education methods. The emphasis should be on telling a particular audience the personal story of the "learning journey," rather than just recounting the facts as in a traditional paper. The objective is not to state the answer but to tell how this student arrived at this answer.

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| tip | With highly cognitive projects, don't be overly concerned if kids have gaps in their basic skills like reading or spelling. Yes, it will cause obstacles and complications, and you must be sure not to set the kids up for failure by pursuing projects that are beyond their age or abilities; however one of the great advantages of the inquiry approach is that kids will want to learn the answers and will become more energized to overcome any skill deficiencies to achieve that goal. Use that fact, and don't derail their progress by fretting over every misspelled word or grammatical error. |

The finished product could appear in any number of forms—a paper, a Web page, a collage or a slide show, just for starters. When is it time to report? Since learners are dealing with self-directed questions that have highly personal value, they should report when they are satisfied with the answer.